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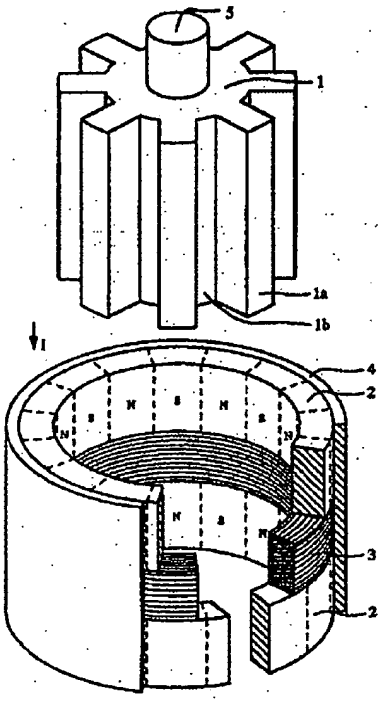
(54) Title: ONE WAY INTERACTIVE ELECTRIC MOTORS

(57) Abstract

The electric motor of this invention is a reluctance motor with a rotor (1) like a cogwheel made up of ferromagnetic materials having recesses (1b) and salient junctions (1a). Further, a position detector (6, fig. 6) is fixed at the rotor (1) due to control the rotor position. The stator consists of permanent magnets (2) and an additional coil (3) on the ferromagnetic yoke (4). The number of the poles of the stator is identical with the number of the salient junctions (1a) of the rotor (1). Each pole of the stator includes one pair of permanent magnets (2) with a length of one pole pitch (T, fig. 5). The motor is driven by a power source (7, fig. 6) with an electronic part (8, fig. 6) which feed the coil (3) like as a motor during the first and third quarter of each pole pitch (T/4, fig. 5) and get current from the coil (3) like as a generator during the second and fourth quarter of each pole pitch.



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The electrical motors, invented, consist of a core, produced from ferromagnetic material having recesses and salients like cogwheel, magnets, established so, one of its pole on the opposite side of recesses of the core and the other pole of it on the opposite side of salients of the core, and electromagnets, designed so its magnetic flux creates circuit while flowing through magnets and the core.

Generally, the pole numbers of rotor and stator on electrical motors are equal. On the invented motor, there are a lot of magnetic poles opposite of an electromagnetic pole. For that reason magnetic flux flowing on electromagnet is as much as the flux difference between the 'N' and 'S' poles of magnets. This difference is the result of magnetic reluctance, caused by recesses and salients of the core.

The most important special feature of this invention is that instead of electromagnet and magnetic flux of magnet unites, creating a more powerful flux and a large amount of power between the ferromagnetic core and magnets, thanks to using of multi-poled magnets, the effect of rotating rotor to the magnetic flux of the electromagnet lessens. The name of the invention is given because of this special feature. 'One way interactive' concept in the name of the invention emphasises, one way of the interaction is reduced greatly and turned into effect.

The construction, the function and the other advantages of the invention are explained in the following paragraphs with the aid of attached figures. These figures are given as samples and does not set a limit.

Figure 1: The appearance from one angle of the rotor and the stator of a motor put in order as eight couple-poled according to the invention. Ferromagnetic core has been put in order as rotor. There are two magnet groups that wraps the rotor from lower and upper part and in the middle part

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DESCRIPTION

ONE WAY INTERACTIVE ELECTRIC MOTORS

It is a known reality that a magnetic field comes into existence around a conductor when electrical current flows on it. With this special future, making dense of magnetic field on a certain area, the electromagnets, and designing the electromagnets in an order and movable continuously, the electrical motors are made.

Whenever electrical energy is applied to an electromagnet, at first, the electrical energy, spent because of the induction comes into existence against the current, is stored in electromagnet as magnetic energy. When the electrical energy is inturreptud, the magnetic energy, stored in the electromagnet, creates induction on the same direction with the current and turns into electrical energy again.

If we take a DC Electric motor with the magnet on its stator and electromagnet on its rotor, as an example, the functioning of this motor simply becomes true like this: On this motor, the magnetic flux of magnet create circuit passing through the electromagnet. To each of the electromagnet on rotor, electrical energy is applied creating magnetic flux reverse to this pole while flowing through one of the magnet and as approached to the other pole the electrical energy shut off. In this time, the magnetic flux passing through the electromagnet changes the direction. The total variation of magnetic flux is double of the magnetic flux flowing from the electromagnet. The multiplication of the induction, caused by the variation of this magnetic flux, and the current give the electrical energy, spent to get mechanical energy.

the auxiliary ferromagnetic material (4); Auxiliary ferromagnetic material (4) causing of magnetic flux of magnet and electromagnet to create circuit; position detector (6) controls the direction and timing of energy, applied to the motor and position of rotor (1) with the motion taken from rotor axle; power source (7) that able to apply energy to the motor in double way with the information taken from position detector and electronic part (8) that provides the magnetic energy stored in electromagnets be gained back as electrical energy.

One of them of ferromagnetic core (1) like cogwheel and magnet group (2) is arranged as rotor, the other one as stator and electromagnet coil (3) preferably stays at the stator.

The other parts of the motor, in part of the technics, known, are the bearing that enable the rotor to rotate on an axle or plane, similar seatings and the coverage of motor.

The parts of the motor, explained generally above, provides the invention to be designed as many models.

The rotor and stator parts of the invention, with the easiest usage and top model (Fig.1), are explained below.

Rotor (1) is like a long and cylindrical bar having salients (1a) like cogwheel from center toward out side on the outer surface. On the opposite side of this recesses (1b) and salients (1a) of the core like cogwheel, there is a stator, wraps the core completely, and air distance between the core and the stator. This stator consists of three parts. In the middle part of the stator there is a conductor coil (3) that wraps the core. This coil (3) and the core of rotor (1) form an electromagnet. Stator consists of two magnet groups that they are established on the upper and lower part of stator, wrapping the rotor and on the opposite of the each salient of rotor at the upper part, there is one pole (N,S) of magnet and at the lower part the opposite pole (S,N) on each of the

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are electromagnetic coil. Some crosscut of the stator has been taken to make the detail seen and rotor is drawn over the stator. On this figure, the known technical parts of the motor are not drawn.

Figure 2, 3 and 4: The view from the direction of arrow ' I ' of the smallest section (a couple-pole of magnets and salient of the core) with some features with the motor illustrated on Figure 1. The representative drawn of three different position of tracking way of magnetic flux in 'An Energy Loop' which described below.

Figure 5: Variance graphs within 'Energy Loop' of the electric and mechanical values being subject to the invention.

Figure 6. It is the diagram of the optical position detector and electronic power source to feed a motor with eight couple-poled which belongs to the invention. This power source controls the electrical current, direction and timing according to the information comes from position detector that perceives the position of rotor as optically, depending on the opaque and transparency parts of a disk, connected to the rotor.

The motor system belongs to the invention consists of those parts: on a surface, the core like cogwheel or cores (1) made up of ferromagnetic materials having recesses (1b) and salients (1a) one after another; a magnet or a group of magnet (2) accross of each salient (1a), there is a pole of magnet (N,S) and accross of each recesse (1b) of core there is an opposite pole of magnet (S,N), creating a plane at an appropriate position of rotor; core like cogwheel (1) that its magnetic flux flows through the magnet and cogwheel type core, creating a circuit or one or more electromagnet coil (3) wrapped on

apply energy to the electromagnetic coil (3) to activate the poles opposite of the recesses (1b) of ferromagnetic core (T1 or T2 becomes conductive). Active poles attract the salients of ferromagnetic core and create a force to make the rotor to move towards the 'T/2' position. With the effect of this force the rotor increases its speed and whenever passed the 'T/4' position (Figure 4) the energy, applied, is shut off (T1 and T2 don't cause the current to flow). The magnetic energy, stored in the electromagnets, flows through the diodes (D1 or D2) for some time and turns back to the power source as electrical current. When the rotor comes the 'T/2' position an energy loop is over and the above mentioned actions continue with the current, applied to the electromagnet coils of the power source, in the reverse direction. In this way, motor produces mechanical energy with the continuous movement.

The energy traffic of motor and the other specifications can be examined in details with the graphics in figure 5.

Graphic 'A', when the rotor rotated the induction comes into existence on electromagnet coils (3) and this caused by the more magnetic flux flows through the magnet pole, close to the salients of the ferromagnetic core (1a). To become little of this difference of magnetic flux, the dimension of the magnet poles in the motion direction, should not be so much bigger than the thickness of magnet.

Graphic 'B' shows the total electrical tension at the tip of motor coils.

Graphic 'C' shows the current flowing through these coils. The electrical energy, applied to the motor coils is shut off when T/4 position is passed. With the recuction of the magnetic field of electromagnet, the magnetic flux difference on the active and passive poles and the amount of magnetic flux, flowing through the electromagnet is reduced (Fig. 3, Fig. 4). This change of

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magnet group, opposite of the recesses and salients there is a magnet pole. The outer part of stator, covered with ferromagnetic conductor (4) that makes the magnetic flux flow easily and takes the whole stator inside.

The motors, belong to the invention, function like step motors. The magnetic flux, come into existence when energy is applied to the electromagnet coils (3) strengthen the magnet magnetic flux in the same direction and weaken the magnet magnetic flux in the opposite direction.

The poles of the magnet that its magnetic flux is strenghtened, are named 'Active' the others are named 'Passive' Active poles pull the attract the salients of the ferromagnetic core more powerfully compared to passive poles. Attractive force cause the rotor to move as the salients of the ferromagnetic core and active poles come across of each other. When this motion is ended the energy applied to the electromagnet, is shuts off and with the application of energy on the reverse direction, active and passive poles change the place and so the continuous movement of the rotor is provided.

The time, from the application of energy to the electromagnet and till the current becomes zero after energy is shut off, is called 'An Energy Loop'. The equivalent meaning of this definition in mechanic; the position of the salients of ferromagnetic core on the opposite of a magnet's pole '0', the position on the opposite of neighbour pole 'T/2', this is the movement from '0' position to 'T/2' position and it is the half of a period. To understand how the motor funciton, it is enough to examine an energy loop.

The function of these motors, can be examined in details with the aid of figure 2,3 and 4. Rotor is at '0' position, whenever energy is not applied to the electromagnet (Fig. 2), the magnetic flux, flowing through the magnet pole opposite of the salient of rotor (1a), is little bit more compared to the other pole. When a little movement of rotor from '0' to 'T/2' position occurs, the position detector (6) feels this and arouse the power source to cuse it to

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to use ferrite as ferromagnetic core and to have a structure with more poles by decreasing the dimensions of the magnet pole in the movement direction.

An industrial application of this invention might be, depending on the design, the range of electric motors with various tension and current values, in various sizes and types. Such motors might be constructed as motors having circular motion on an axis as well as linear motors moving on a line.

On the basis of this invention, prototypes of three different types have been manufactured and test data was obtained in accordance with the indicated specifications. One of these, the type illustrated in figure 1 is the motor prototype with highest performance and energy efficiency. On the prototypes are used sheet iron with silicone as the ferromagnetic material and anisotropic ceramic magnet as the magnet.

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magnetic flux creates induction on electromagnet coils and cause the flowing current through the coil to last for some more time.

Graphic 'D' shows the magnetic attraction force between the rotor and stator. This force is the difference of magnetic attraction forces between the active and passive poles. Magnetic attraction force is proportional with the magnetic flux square. This ratio cause the difference of magnetic attraction force to become larger even if the difference of magnetic flux is smaller between two poles.

Graphic 'E' shows the mechanical energy taken from motor, Graphic 'F' shows the electrical energy applied to the motor. Some part of the electrical energy is taken back after the T/4 position but the mechanical energy, taken back from motor, lasts after the T/4 position. The electric energy supplied to the motor is the energy consumed for the heat energy caused by the resistance of electromagnet coils, ferromagnetic material losses and induction created by the rotor motion.

In the case of other electric motors, usually the magnetic current going out of the magnet poles forms a circuit by passing through the electromagnets; whereas by this invention, the circuit is formed by a major part of the magnetic current of magnet poles passing through these poles and by a minor part passing through the electromagnet. As a result of this, the magnetic current difference caused by the rotor rotation and induction are less in this motor system being the subject matter of the invention.

Due to the structure of multiple poles in the invention, generally motors can be constructed, which have high torque and less rotor speed. By high frequency, it is possible to construct very high performance motors by increasing the rotor speed. For the high frequency motor, it is recommended

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circuit. This feature cause the induction, been because of the rotor movement,, to become lesser.

Claims 3: The feature added to the motor system in Claims 1 is; the magnetic flux, com into existence when energy is appied, make the magnet magnetic flux (active pole) more powerful in the same direction and weaken the magnet magnetic flux (passive pole) in the reverse direction. The magnetic flux, flowing through the active poles, is the total of the magnetic fluxes, flowing through the electromagnet and passive poles. This feature cause the magnetic attraction force between the rotor and stator to become bigger than the attraciton force, come into existence by the magnetic flux of electromagnet, by itself.

Claims 4: The feature added to the motor system in Claims 1 is; the large amount of electrical energy, applied to electromagnet coil (3), is stored in ferromagnetic core and magnets because of the features, defined in Claims 2 and 3. After the energy, applied to the energy coil (3) is shut off, creates induction on the points of coil and is sent back to the power source by electronic part (8). The mechanical energy is gained during the period in that electrical energy is applied and some part of it taken back.

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CLAIMS

Claims 1: It is an electrical motor system. This motor system consists of those parts: on a surface, the core like cogwheel or cores (1) made up of ferromagnetic materials having recesses (1b) and salients (1a) one after another; a magnet or a group of magnet (2) accross of each salient (1a), there is a pole of magnet (N,S) and accross of each recesse (1b) of core there is an opposite pole of magnet (S,N), creating a plane at an appropriate position of rotor; core like cogwheel (1) that its magnetic flux flows through the magnet and cogwheel type core, creating a circuit or one or more electromagnet coil (3) wrapped on the auxiliary ferromagnetic material (4); Auxiliary ferromagnetic material (4) causing of magnetic flux of magnet and electromagnet to create circuit; position detector (6) controls the direction and timing of energy, applied to the motor and position of rotor (1) with the motion taken from rotor axle; power source (7) that able to apply energy to the motor in double way with the information taken from position detector and electronic part (8) that provides the magnetic energy stored in electromagnets be gained back as electrical energy.

These are the motors, applied to the industry with using these parts and there are ferromagnetic core like cogwheel and magnet group, one of them stays on the rotor and the latter on the stator.

Claims 2: This is a motor system according to Claim 1, the specifications, gained to this motor system are; although the magnetic fluxes, coming out of electromagnet, creates circuit passing through many magnet poles (N,S), the big part of the magnet magnetic fluxes, passing through their own poles (N,S) and a little part passing through electromagnet, create

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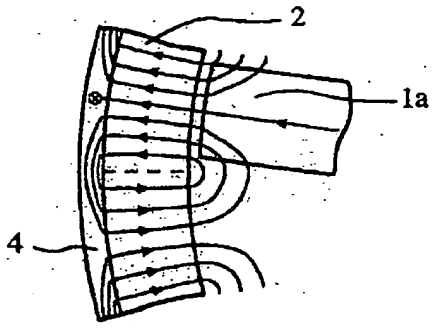

FIGURE 2

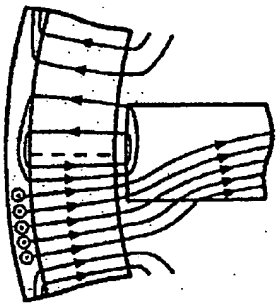

FIGURE 3

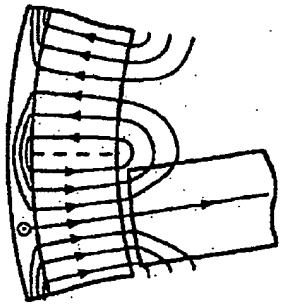

FIGURE 4

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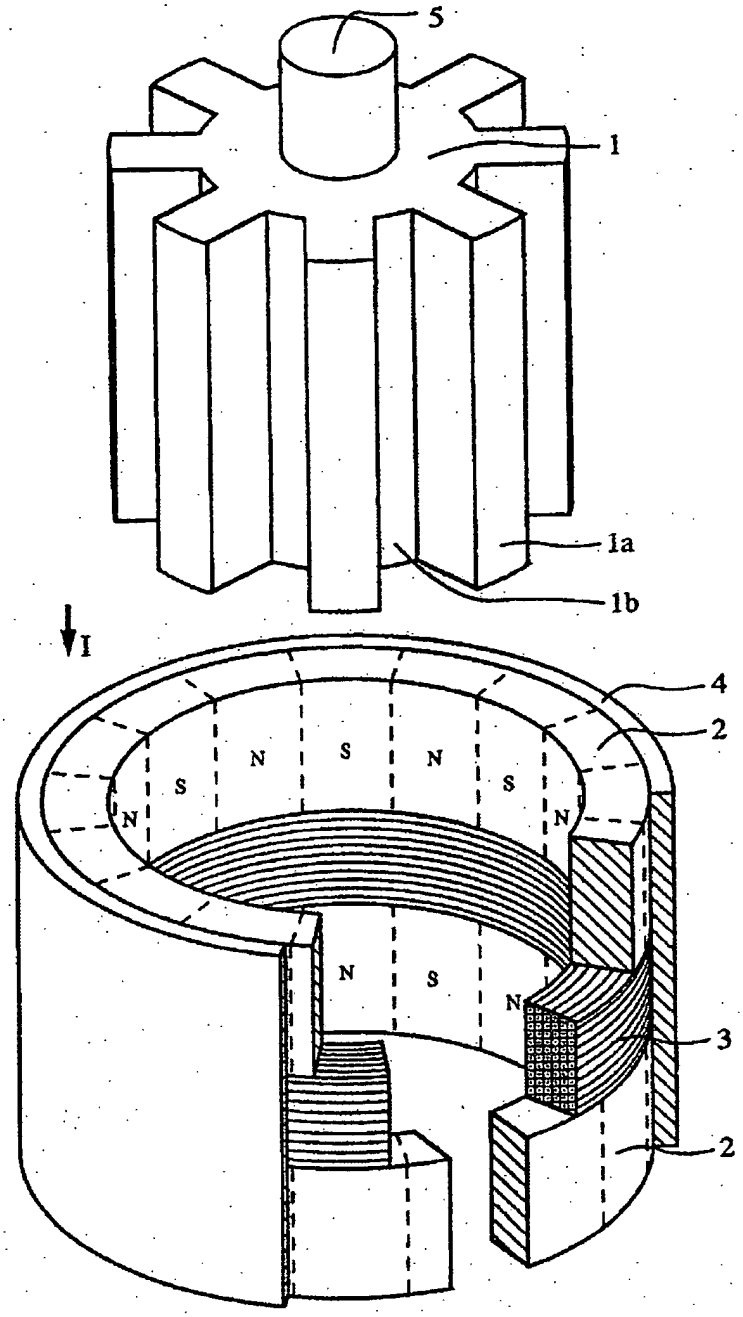

FIGURE 1

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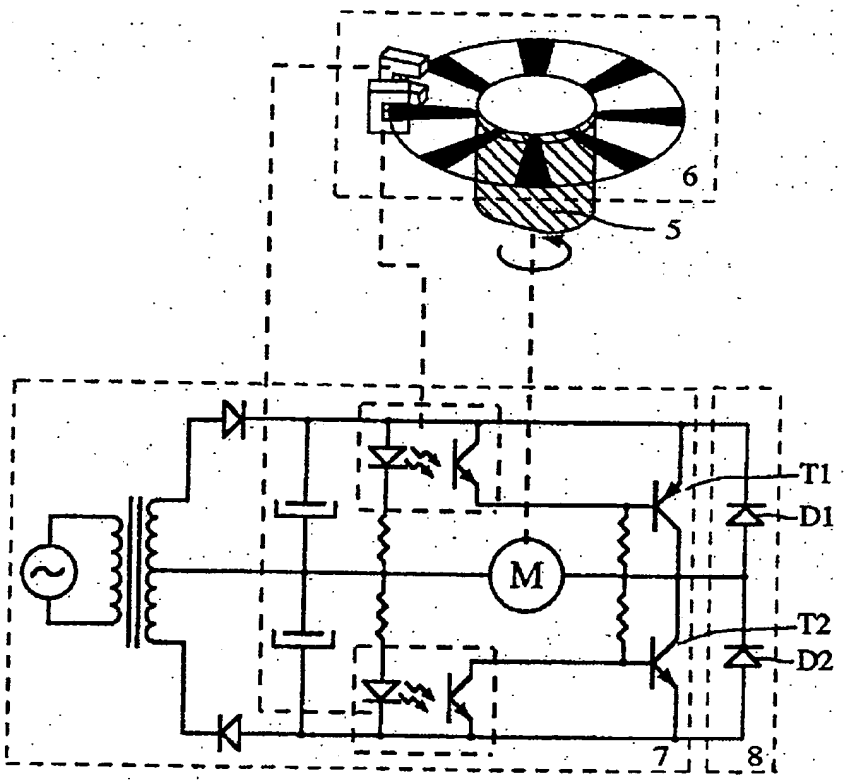

FIGURE 6

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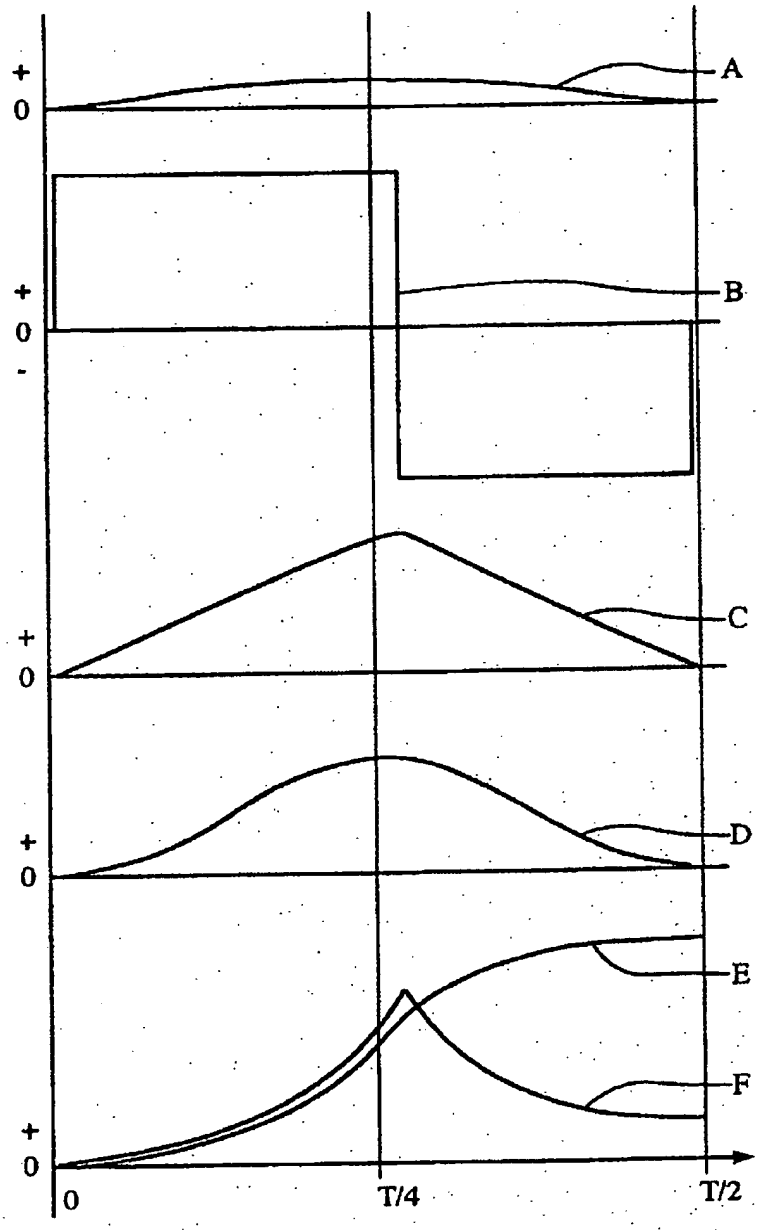

FIGURE 5

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International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

IPC[6]: H 02 K 21/04, 19/24, 53/00; H 02 P 7/05

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC[6]: H 02 K; H 02 P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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EPODOC, PAJ, WPI, TXTUS1, TXTUS2

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Soviet Inventions Illustrated, Section El: Electrical, week E05, Derwent Publications Ltd., SU 824-380 A (MOSC AVIATION) 17 March 1982 (17.03.82), & SU 824-380 A (MOSC AVIATION) 23 April 1981 (23.04.81), fig.2.	1-3
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(PCT 细则 44.1)

	发文日(日/月/年) 03 · 6月 2004 (03 · 06 · 2004)
申请人或代理人的档案号 IP040007	关于后续行为 见下面第 1 和第 4 段
国际申请号 PCT/CN2004/000151	国际申请日(日/月/年) 27.2 月 2004(27.02.2004)
申请人 朱正风	

1. ☒ 兹通知申请人，国际检索报告和国际检索单位书面意见已经做出并随本通知传送。

   按条约 19 条提出修改和说明：
   如果申请人愿意，可享受修改国际申请权利要求的权利（见细则 46）：
   何时？提出修改的期限通常是自国际检索报告送交日起二个月，但是，更详细的情况，见附页上的说明。
   何地？直接送往国际局 International Bureau of WIPO
   34, Chemin des colombettes
   1211 Geneva 20, Switzerland
   Facsimile No: (41-22) 740.14.35
   有关更详细的规程，见附页上的说明。

2. ☐ 通知申请人，将不做出任何国际检索报告，根据条约 17(2)(a)的关于不做出国际检索报告的声明和国际检索单位书面意见随本通知书传送。

3. ☐ 就按细则 40.2 对附加费缴纳的异议，通知申请人
   ☐ 异议及异议决定随申请人要求把异议及异议决定寄送指定局的请求已一起传送给国际局。
   ☐ 对异议至今尚未做出任何决定，一旦做出决定，将通知申请人。

4. 后续行为：提醒申请人注意下列事项：
   国际申请自优先权日起满十八个月后立即由国际局公布。如果申请人希望避免或延迟公布，必须在国际公布的技术准备完成之前，将分别按细则 90 之二.1 和 90 之二.3 规定的撤回国际申请或撤回优先权要求的通告送达国际局。
   申请人可以就国际检索单位的书面意见向国际局提出非正式的意见，除非国际初步审查报告已经或即将作出，否则国际局会将此意见副本寄往所有指定局。这些意见在自优先权日起三十个月届满之前不会公开。
   对一些局而言，如果申请人希望延迟到自优先权日起 30 个月进入国家阶段(在有些局甚至更晚些)，必须在自优先权日起 19 个月之内提出国际初步审查要求，否则，自优先权日起 20 个月内完成进入国家阶段的规定行为。
   对其他指定局而言，即使未在 19 个月内提交要求书，30 个月的期限仍然适用。
   详细情况见 PCT/IB/301 的附件，关于各局适用的时间期限见 PCT 申请人指南第二卷国家篇和国际局网站。

中华人民共和国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路 6 号 100088 传真号： (86-10)62019451	授权官员 周鸣雷 电话号码 (86-10)62084924

PCT/ISA/220 表 (2004 年 1 月)　　(见附页上的说明)

PCT/ISA/220 表的说明

本说明目的在于给出关于按条约 19 条提交修改的基本规程。本说明以专利合作条约、该条约的细则和行政规程的要求为根据。当本说明和这些要求之间出现不一致的情况时，以后者为准。有关更详细的情况，可查 WIPO 的出版物《PCT 申请人指南》。

本说明中，“条约”，“细则”和“规程”分别指 PCT 条约、PCT 细则和 PCT 行政规程的条款。

关于按条约 19 条修改的规程

申请人在收到国际检索报告和国际检索单位书面意见后有一次修改国际申请权利要求的机会。可是应该强调，由于在国际初步审查程序期间国际申请的所有部分(权利要求书、说明书和附图)都可以修改，通常不需要按条约 19 条提出修改权利要求，除非申请人为临时保护的目的需要公布修改后的权利要求或者有在国际公布之前修改权利要求的其它的理由，还应该强调，临时保护仅在某些国家可以获得（见《PCT 申请人指南》I/A 卷 B1，B2）。

申请人应注意如下事实：如国际检索单位按照条约 17（2）作出不制定检索报告的宣布，则不允许进行按照条约 19 条的修改。（见《PCT 申请人指南》I/A 卷第 296 段）

国际申请的哪些部分可以修改？

按条约 19 条规定只有权利要求可以被修改。
在国际阶段期间，也可以对国际初步审查单位提出按条约 34 条修改(或进一步修改)权利要求。只有在国际初步审查程序中，才可以按条约 34 条对说明书、附图作修改。

在进入国家阶段时，按条约 28，或在适当的情况下，按条约 41，可以对国际申请的所有部分作出修改。

何时修改？自传送国际检索报告之日起两个月内或自优先权日起 16 个月内，以后届满的期限为准。可是应该说明,如果国际局在适用的期限届满之后但在国际公布的技术准备完成之前收到修改，该修改将被认为按接时收到(细则 46.1)。

何处不能提交修改？

修改只能向国际局提出而不能向受理局或国际检索单位提出(细则 46.2)。
国际初步审查要求已被/被提交的，参见下面。

如何修改？删去一项或多项完整的权利要求，或者增加一项或多项新的权利要求或者修改一项或多项原提出的权利要求的内容。

对于因一处修改或多处修改而不同于原始提交页的权利要求书的每一页，必须提交替换页。

替换页上所有的权利要求必须用阿拉伯数字编号。如果删去一个权利要求，不要求对其它权利要求重新编号。在权利要求重新编号的所有情况下，必须对权利要求连续编号(行政规程 205(b))。

修改必须用国际申请公布时使用的语言做出。

什么文件必须/可以随修改附送？

信件(行政规程 205(b))：

修改必须和一封信一起提交。

信件不和国际申请以及修改后的权利要求一起公布。不应该把它和“按条约 19 条(1)所作的说明”相混淆(参见下面，“按条约 19 条(1)所作的声明”)。

信件必须使用英语或法语，可由申请人选择。可是，如果国际申请的语言是英语，信件必须用英语；如果国际申请的语言是法语，则信件必须用法语。

PCT/ISA/220 表的说明（续页）

信件必须指明原始提交的权利要求与修改后的权利要求之间的区别，特别是必须结合国际申请中的每项权利要求（当然几项权利要求的相同说明可以组合在一起）予以说明，是否

(i) 该权利要求未作改变；
(ii) 该权利要求被删除；
(iii) 该权利要求是新的；
(iv) 该权利要求替换原始提交的一项或几项权利要求；
(v) 该权利要求是分割一项原提出的权利要求的结果。

下面的例子说明必须以随附的信件来解释修改的做法：

1. [原权利要求 48 项，在修改几项权利要求后成为 51 项]：
"权利要求 1 至 29、31、32、34、35、37 至 48 被修改后的同样编号的权利要求替换；
权利要求 30、33 和 36 不变；权利要求 49 至 51 是新增加的。"

2. [原权利要求 15 项，在修改全部权利要求后成为 11 项]：
"权利要求 1 至 15 被修改后的权利要求 1 至 11 替换。"

3. [原权利要求 14 项，修改包括删去几项权利要求和增加新的权利要求]：
"权利要求 1 至 6 和 14 不变；权利要求 7 至 13 被删去；增加新的权利要求 15、16 和 17"。或者
"删去权利要求 7 至 13；增加新的权利要求 15、16 和 17；其余的权利要求全部不变。"

4. [作了各种不同的修改]：
"权利要求 1 至 10 不变；权利要求 11 至 13、18 和 19 被删去；权利要求 14、15、16 被修改后的权利要求 14 替换；权利要求 17 分成修改后的权利要求 15、16 和 17；增加新的的权利要求 20 和 21。"

"按照条约 19 条(1)所作的声明"（细则 46.4）

修改可以附有解释修改和说明该修改对说明书和附图可能产生的影响的声明（按条约 19 条（1）说明书和附图不能修改）。

该声明和国际申请以及修改后的权利要求一起公布。

它必须使用国际申请公布时所用的语言。

它必须是简要的，如果使用英语或者翻译成英语，不得超过 500 字。

它不应当和说明原始提交的权利要求与修改后的权利要求之间区别的信件相混淆并且不应当代替该信件。它必须用单独的纸页提出并加上标题以便辨认，最好使用"按条约 19 条（1）所作的声明"字样。

它不可以含有对国际检索报告或报告中所含引用文件之相关性的任何贬低性评论。只有在对特定的权利要求进行修改时，才可以涉及国际检索报告中与该权利要求有关的引用文件。

如果已经提出国际初步审查要求如何办？

如果在按条约 19 条提出任何修改和任何伴随的声明之时，国际初步审查要求已经提出，申请人在向国际局提交修改（和任何声明）的同时也向国际初步审查单位提交上述修改（和任何声明）的副本以及，如果需要，提交这些修改的译文，以便进入该国际初步审查单位的程序（见细则 55.3(a)和 62.2，第 1 句）。进一步的信息见要求书表格（PCT/IPEA/401）的注释。

如提出初步审查要求书，国际检索单位的书面意见将被作为国际初步审查单位的一次书面意见（发出书面意见的单位与国际初步审查单位不是同一单位时除外）这种情况下，提请申请人自 PCT/ISA/220 发文之日起 3 个月或自优先权日起 22 个月内（以后届满者为准）向国际初步审查单位提交书面意见的答复以及修改（如适用）（细则 43 之二.1(c)）。

为进入国家阶段而翻译国际申请如何办？

请申请人注意这一事实，在进入国家阶段时，必须向指定/选定局提供按照条约 19 条修改的权利要求的译本，以代替原始提交的权利要求的译本，或者同时提供原始提交的权利要求的译本。

关于各个指定/选定局的要求的进一步的细节，参见《PCT 申请人指南》第II卷。

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专 利 合 作 条 约

PCT

国际检索报告

(PCT18 和细则 43 和 44)

申请人或代理人的档案号 IP040007	关于后续行为	见国际检索报告的传送通知书 (PCT/ISA/220 表) 和，适用时，见下面第 5 项
国际申请号 PCT/CN2004/000151	国际申请日(日/月/年) 27.2 月 2004(27.02.2004)	(最早的)优先权日(日/月/年) 09.4 月 2003(09.04.2003)
申请人 朱正风		

按照条约 18 由国际检索单位作出的国际检索报告送交申请人。报告副本送交国际局。

本国际检索报告总计 3 页。

☐ 它还附有本报告所引用的各现有技术文件的副本。

1. 报告的基础

a、关于语言，除非在该项下另有说明，国际检索在提交国际申请时所使用之语言的基础上进行。

☐ 国际检索在提供给本国际检索单位之申请的翻译文本的基础上进行(细则 23.1(b)。

b、☐ 关于国际申请中所公开的核苷酸和/或氨基酸序列表，见第 I 栏。

2. ☐ 某些权利要求被认为是不能检索的(见第II 栏)。

3. ☐ 缺乏发明的单一性(见第III 栏)。

4. 关于发明名称，

☒ 同意申请人提出的发明名称。

☐ 发明名称由本国际检索单位确定如下：

5. 关于摘要，

☒ 同意申请人提出的摘要。

☐ 根据细则 38.2(b)摘要(抄录在第 IV 栏中)由本国际检索单位制定。自本国际检索报告邮寄日起一个月内，申请人可以向本单位提出意见。

6. 关于附图，

a.随摘要一起公布的附图是： 图 1 (a)

☒ 按照申请人建议的。

☐ 因为申请人没有建议一幅图。

☐ 因为该图能更好地表示发明的特征。

b. ☐ 无摘要附图

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国际检索报告

国际申请号 PCT/CN2004/000151

A. 主题的分类

IPC7 H02K21/47

按照国际专利分类表(IPC)或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC7 H02K21/47 H02K16/04 H02K16/00 H02K21/04 H02K41/035

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用））

CNPAT WPI EPODOC PAJ

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
A	CN，Y，1160945 （史玲）1997 年 10 月 1 日（01.10.1997），见全文	1-5
A	US，A，4510403 （Pneumo Corporation, Boston, Mass） 1985 年 4 月 9 日（09.04.1985），见全文	1，2
A	WO,A1,99005772 (CAVUSOGLU ALI (TR)) 1999 年 2 月 4 日（04.02.1999），见全文	1，2
A	US，A，4970423 （MATSUSHITA ELECTRIC IND CO LTD (JP)） 1990 年 11 月 13 日（13.11.1990），见全文	1，2
A	CN，A，1050954 （南京航空学院） 1991 年 4 月 24 日（24.04.1991），见全文	1-3

☐ 其余文件在 C 栏的续页中列出。 ☒ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"E" 在国际申请日的当天或之后公布的在先申请或专利

"L" 可能对优先权要求构成怀疑的文件，为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
17. 5月 2004（17.05.2004）	03 · 6月 2004 (03·06·2004)
中华人民共和国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路 6 号 100088 传真号： (86-10)62019451	授权官员 电话号码：(86-10) 62084074

PCT/ISA/210 表(第 2 页)(2004 年 1 月)

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2004/000151

检索报告中引用的专利文件	公布日期	同族专利	公布日期
CN1160945A	01.10.1999	无	
US4510403A	09.04.1985	EP0152675AB	28.08.1985
		JP60176455A	10.09.1985
		CA1213636A	04.11.1986
		IL72975A	30.11.1987
		DE3484432D	16.05.1991
WO99005772A1	04.02.1999	AU3566397A	16.02.1999
US4970423A	13.11.1990	WO8603629A	09.06.1986
		JP61139260A	26.06.1986
		JP61170271A	31.07.1986
		JP62023353A	31.01.1987
		GB2179803AB	11.03.1987
		DE3590633T	12.03.1987
		DE3590633C	04.07.1991
CN1050954A	24.04.1991	无	

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专 利 合 作 条 约

发信人：国际检索单位

收信人：

100083

中国北京市海淀区王庄路 1 号清华同方科技大厦 B 座 15 层

中科专利商标代理有限责任公司

周国城

PCT

国际检索单位书面意见

(PCT 细则 43 之二 .1)

申请人或代理人的档案号 IP040007	发文日 *(日/月/年)* 03 · 6月 2004 (03 · 06 · 2004)
	后续行为 见下面第 2 段

国际申请号	国际申请日 *(日/月/年)*	优先权日 *(日/月/年)*
PCT/CN2004/000151	27.2 月 2004(27.02.2004)	09.4 月 2003(09.04.2003)

国际专利分类(IPC)或国家分类和 IPC 两种分类

IPC7 H02K21/47 H02K16/04 H02K16/00 H02K21/04 H02K41/035

申请人

朱正风

1.本意见包括关于下列各项的内容：

- ☒ I 意见的基础
- ☐ II 优先权
- ☐ III 不作出关于新颖性、创造性和工业实用性的意见
- ☐ IV 缺乏发明的单一性
- ☒ V 按照细则 66.2(a)(ii)关于新颖性、创造性或工业实用性的理由；支持这种意见的引证和解释
- ☐ VI 引用的某些文件
- ☒ VII 国际申请中的某些缺陷
- ☐ VIII 对国际申请的某些意见

2. 后续行为

如果提出初步审查要求书，本次意见将被视为国际初步审查单位(IPEA)的一次书面意见（如果申请人选择的国际初步审查单位非本机构，而且所选国际初步审查单位已按照细则 66.1 之二(b)通知国际局将不考虑国际检索单位的书面意见时例外）。

如本书面意见被视为国际初步审查单位的书面意见，则请申请人在自 PCT/ISA/220 发文之日起 3 个月或自优先权日起 22 个月内（以后届满者为准）向国际初步审查单位提交书面答复并提交修改（如适用）。

3. 详细信息请见 PCT/ISA/220 表格的说明

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国际检索单位书面意见

国际申请号
PCT/CN2004/000151

I 意见的基础

1、关于语言，除非在该项下另有说明，该书面意见在提交国际申请时所使用的语言的基础上制定。

☐ 该书面意见是在原始语言的以下译文_____基础上制定的，该译文供国际检索之用(细则 12.3 和 23.1(b))。

2、关于国际申请中所公开的核苷酸和/或氨基酸序列表和对所称发明的必要性，该书面意见是在下列基础上制定的：

a. 材料的类型

☐ 序列表

☐ 与序列表相关的表格

b. 材料的形式

☐ 书面形式

☐ 计算机可读形式

c. 提交/提供时间

☐ 包括于已提交的国际申请。

☐ 以计算机可读形式与国际申请一起提交。

☐ 为检索之用随后提交本国际检索单位。

3、☐ 另外，在提交/提供了多个核苷酸和/或氨基酸序列表和/或与其相关的表格的版本或副本的情况下，提供了关于后提交的或附加的副本与已提交的国际申请中的序列表相同或未超出国际申请中序列表范围（如适用）的声明。

4. 补充意见

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V. 按细则 43 之二.1 关于新颖性、创造性或工业实用性的理由；支持这种意见的引证和解释

1. 意见

新颖性(N)	权利要求	1-5	是
	权利要求	无	否
创造性(IS)	权利要求	1-5	是
	权利要求	无	否
工业实用性(IA)	权利要求	1-5	是
	权利要求	无	否

2. 引证和解释

D1: CN，A，1160945

D2: US，A，4510403

D3: WO，A，99005772

D4: US，A，4970423

D5: CN，A，1050954

本发明涉及一种外磁路永磁偏磁式磁阻电机，包括由支承壳体、定子、转子、永磁体构成，其特征在于，定子至少由一对独立结构组成，导磁材料制成的支承壳体与定子组成的磁路间布设有永磁体。

在现有的技术中，没有公开利用支承壳体形成直流外磁路与定子铁心原有交流磁路相结合的电机，也没有给出任何技术启示使现有技术的技术人员得到权利要求中限定的磁阻电机。因此本发明对所属领域的技术人员来说不是显而易见的。

因此权利要求 1-5 具备 PCT 条约第 33（2）条规定的新颖性，PCT 条约第 33（3）条规定的创造性和 PCT 条约第 33（4）条规定的工业实用性。

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VII. 国际申请中的某些缺陷

国际申请在形式上或内容上存在下列缺陷：

1、权利要求 1 中特征“导磁材料制成的支承壳体与定子组成的磁路间布设有永磁体”与说明书实施例中描述的永磁体设置在定子导磁材料制成的支承壳体与定子（2、2a）之间不一致，因此该权利要求没有以说明书为充分依据，不符合 PCT 条约第 6 条的规定。

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AN OUTER MAGNETIC CIRCUIT BIAS MAGNETIC BIAS RELUCTANCE MACHINE WITH PERMANENT MAGNETS

ABSTRACT: This invention relates to electromechanical field, and particularly relates to improvement of a reluctance machine, and provides an outer magnetic circuit bias magnet reluctance machine with permanent magnet. The reluctance machine is made up of a housing for supporting the machine, a stator, a rotor and permanent magnets. The stator at least consists of a pair of unit constructions. The permanent magnets are placed in magnetic circuit that is made up of the housing for supporting the machine made of magnetic material and the stator. And the stator suits with an inner rotor or an outer rotor, a cup rotor, a disk rotor or a toothed rack rotor. This invention can increase sufficiently utility factor of material, depress cost, and have more application, and the ratio of performance and price of the reluctance machine is obviously higher than that of a synchronous machine.

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